

**REMARKS**

The Applicant thanks the Examiner for the telephonic interview of September 17, 2010 between the undersigned, Examiner Khatri and his Supervisor. During that telephonic interview, the Applicant and the Examiner discussed distinctions between the cited prior art reference of Barrows (U.S. Patent No. 1,988,964) and subject matter as claimed in the application. Specifically discussed was the absence of teaching in Barrows with regard to the claimed feature of a metal foil being bonded to a coating of thermosetting powder which overlays a surface of the glass substrate. Also discussed was the absence of teaching in Barrows with regard to the metal foil being bonded to a coating so as to relieve thermal stress in the glass substrate.

Claims 27-29, 31, 37, 45-47 and 49-50 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Gerhardinger et al. '199 (U.S. Patent No. 5,714,199) in view of Luski et al. '369 (U.S. Publication No. 2003/0079369). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Gerhardinger et al. '199 teaches a method of forming a polymer backing to a glass substrate through the use of pre-polymer powder applied onto either surface of the substrate while the substrate is at a high enough temperature to polymerize the powder in a substrate manufacturing or fabrication process (column 2, lines 29-35).

The principal example given is where the backing is applied to the glass substrate on-line as it emerges as a continuous, hot ribbon in float-glass manufacture. Gerhardinger et al. '199 indicates that the polymer backing can be applied on-line or off-line (column 2, lines 39-41), but the only alternative to the application of the teaching

in the context of float-glass production of the substrate is where the substrate is formed as tempered glass and "is still hot enough to polymerize the powder" (column 2, lines 42-44). Moreover, (a) the specific examples described by Gerhardinger et al. '199 with reference to the drawings is in the context of the glass ribbon emerging 'still hot' from float-glass production, (b) EXAMPLES I-III (columns 8-9) are correspondingly related to use of a float-glass furnace, and (c) the claims are all related to depositing powder onto a float-glass ribbon or tempered glass at a temperature above the polymerization temperature of the powder. Gerhardinger et al. '199 stresses that "it is important that the temperature of the substrate, at the desired point of application [of the powder] is above the polymerization temperature of the pre-polymer powder" (column 5 lines 39-42). The Applicant asserts that in the method taught by Gerhardinger et al. '199, not only is it important for the temperature of the substrate at the application point to be higher than the polymerization temperature of the pre-polymer powder, but it is required to be higher than the polymerization temperature.

The teaching of Gerhardinger et al. '199 is accordingly concerned specifically with situations in which the substrate is already hot enough, or more than hot enough, in a manufacturing or fabrication process, to bring about polymerization of the applied powder. As noted by the Examiner on pg. 3 of the official action, Gerhardinger et al. '199 "is silent to heating the glass substrate from the second surface". More particularly, Gerhardinger et al. '199 is totally silent on the application of heat to the glass substrate other than during fabrication or manufacture of the glass substrate, simply because the teaching is concerned solely with circumstances in which the glass substrate is already hot from its fabrication or manufacturing process, and external heat

input is not needed to bring about polymerization or curing of the powder dispensed onto the first surface of the glass substrate.

In the context of the Gerhardinger et al. '199 reference therefore, there is nothing to lead obviously to the application of heat externally to a "second surface". Accordingly, identification of the Gerhardinger et al. '199 teaching as lacking any teaching concerning heating "the second surface" (namely the surface opposite the surface onto which there is deposition of the powder) requires hindsight as to the present invention.

The Applicant respectfully contends that since there is no need for applying heat to either surface in order to cure or polymerize the pre-polymer powder layer applied on the opposite surface there would be no reason to combine the teachings of the reference of Luski et al. '369 with the teachings of the reference of Gerhardinger et al. '199 in the manner suggested by the Examiner.

Luski et al. '369 generally teaches a process and apparatus for forming a thick film layer on a supporting carrier. The supporting carrier is generally a substrate serving as a basis for a printed circuit and the thick film layer is a polymer thick film. After the polymer is layered onto the supporting carrier, the polymer layer is heated so as to evaporate the solvent from the polymer layer.

The Examiner notes in the official action, that Luski et al. '369 is a reference which "teaches a certain concept, namely, heating from the second surface of a substrate carrier in order to form uniform coatings that do not have the "skin effect" and other surface defects. In fact, the purpose of Luski et al. '369 is the disclosure of a method which "causes less damage to the structure upon drying" (paragraph [0039]).

Damage is said to be caused by an "unevenly dried layer, with the surface of the layer drying earlier than the interior" (paragraph [0011]).

As the Examiner is likely aware, if the proposed combination of the base reference with the supporting reference would render the prior art invention of the base reference being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In *re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In addition if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified (base reference), then the teachings of the combined references are not sufficient to render the claims *prima facie* obvious. In *re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

With regard to Gerhardinger et al. '199 the base reference relates to a method for applying a polymer powder onto a substrate during fabrication. The article resulting from taught process is to have a backing that "improves the overall stability of the backed article" (col. 2, Ins. 24-26). As a result of the prior art method, the finished article is said to have a backing of polymer that "quickly cures as the substrate drops in temperature during the normal cooling stage of the float glass ribbon process [and] . . . is durable and abrasion resistant, and exhibits excellent opacification and adhesion properties" (col. 2, Ins. 57-63).

To produce a glass substrate with a backing that has the desired characteristics, the method of the base reference of Gerhardinger et al. '199 allows the glass substrate to cool normally. During the normal cooling stage of this backing, the substrate is passed over air knives that "enable skinning or solidification of the surface of the

polymer... [t]his prevents mask off or removal of the backing as the ribbon traverses the aligned rolls (col. 6, Ins. 59-63).

In other words the method of the base reference Gerhardinger et al. '199 achieves the purpose of improving the overall stability of a backed substrate by creating a skin on the polymeric layer or solidifying the surface of the polymer as it cools and cures on the surface of the substrate. In view of the teachings of the supporting reference of Luski et al. '369 as discussed above, the Applicant contends that there is no suggestion or motivation to make the proposed modification as suggested by the Examiner. Nor are the teachings of the combined references sufficient to render the claims *prima facie* obvious.

In sum, since the base reference of Gerhardinger et al. '199 teaches the step of "skinning" the backing as it cures to achieve the desired benefits of a backing with a greater durability while the supporting reference of Luski et al. '369 teaches a method which prevents the "skin effect" on the backing or an "unevenly dried layer" as it cures so as to achieve the desired benefits of an undamaged layer on substrate, the Applicant asserts that Gerhardinger et al. '199 and Luski et al. '369 teach away from each other and can not be properly combined.

Furthermore, the claims of the application are distinct from the teachings of Gerhardinger et al. '199 and Luski et al. '369 as these references fail to teach a number of the limitations recited in the claims of the application. Initially, both Gerhardinger et al. '199 and Luski et al. '369 either alone or in combination fail to teach, suggest, disclose or remotely hint at a method of manufacturing a powder coated

glass panel which includes the step of bonding a metal foil to a coating of cured thermosetting powder on which overlays the side of a glass substrate.

Further, the references fail to teach, suggest, disclose or remotely hint at a method of manufacturing a powder coated glass panel which includes the steps of bonding a metal foil to the coating on the back surface of the glass substrate and bonding the metal foil to the front surface of the glass substrate, with the extent (width) of the metal foil bonded to the coating being greater than the extent of the metal foil bonded to the front surface of the glass substrate so as to so as to reduce thermal stress in the glass substrate.

In order to emphasize the above noted distinctions between the presently claimed invention and the applied art, independent claim 45 of this application now recites the "step of "curing the thermosetting powder to form a coating on the first surface of the glass substrate, the step of curing the thermosetting powder comprising application of heat to the thermosetting powder from a source of infra-red radiation *located in proximity to the second surface of the glass substrate*, the source of infra-red radiation applying the infra-red radiation *via the second surface* of the glass substrate to heat the thermosetting powder, the application of heat to the thermosetting powder being partly by transmission of the heat conducted through the glass substrate *from the second surface to the first surface* of the glass substrate and partly by transmission of the infra-red radiation through the glass substrate to the thermosetting powder". Such features are believed to clearly and patentably distinguish the presently claimed invention further from all of the art of record, including the applied art.

Claims 27, 28, 30-38, 46 are each dependent directly or indirectly on claim 45, and so like claim 45 are each also clearly patentable over the art of record, including the applied art.

Claim 49 now recites *a source of infra-red radiation located in proximity to the second surface of the glass substrate to apply the infra-red radiation to the second surface, the source of infra-red radiation comprising a box having a glass lid and at least one infra-red lamp within the box for emitting the infra-red radiation through the glass lid*. No such box with glass lid where infra-red radiation is emitted through the glass lid is known from the art of record or the applied art, emphasizing further the patentability of Claim 49.

Additionally, Claim 50 now recites application of heat to the thermosetting powder from a source of infra-red radiation located within an oven where the source is under the lower surface of the glass substrate *while maintaining an environmental near-ambient temperature above the glass substrate within the oven*. This latter feature is believed to clearly and patentably further distinguish the method of claim 50 from all of the art cited of record, including the applied art. In particular, it is noted that the heaters 24, 26 and 28 of Luski et al '369 raise the temperatures throughout the chambers 12, 14 and 16 respectively, including above the PTF substrate, to temperatures above ambient for drying purposes.

Further, independent claim 47 of this application now recites the steps of *"bonding metal foil to the coating on the first surface of the glass substrate to form a thermal stress reducing first border; and a step of bonding metal foil to the second surface of the glass substrate to form a second border, the first border having a greater*

width than a width of the second border to reduce thermal stress in the glass substrate". Such features are believed to clearly and patentably distinguish the presently claimed invention further from the applied art of Gerhardinger et al. '199 and Luski et al. '369.

Claims 40-44 and 48 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Gerhardinger et al. '199 in view Boucher et al. '466 (U.S. Patent No. 3,549,466) and Storrs '964 (U.S. Patent No. 1,988,964). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

As recognized by the Examiner with regard to previous claims 40 and 48, the reference of Gerhardinger et al. '199 "is silent to a metal foil extending inwardly only partially from the coating". In citing the reference of Boucher et al. '466, the Examiner notes that a metal foil is used to seal the side surface of a transparent assembly.

Boucher et al. '466 teaches a laminate comprising a metal foil which is soldered to the side surface of the laminate to seal the surface of the laminate and prevent water or deleterious gasses from getting between the layers of the laminate. It is noted by the Examiner that the metal foil of Boucher et al. '466 only covers the sides of the laminate and does not extend inward therefrom.

The Examiner cites Storrs '964 stating that this reference teaches a "metal edge strip... that forms inward extensions" (paragraph 25 of Office Action). The reference of Storrs '964 relates to a window pane comprising two layers of glass and at least one intermediate layer of material other than glass and spacing members which can be used as holding means. In addition a supplemental means can also be used to hold



the laminate structure together. The supplemental holding means may be in the form of edge binding which spans the side of the laminate and overlaps opposite surfaces of the structure by a short distance as plainly indicated in the drawing. The edge bindings are said to preferably consist of wire clips or a metal strip held on to the laminate structure by friction or otherwise (pg. 2, Ins. 64-66). The edge bindings are shown in Figs. 2-5 to overlap the top and bottom surfaces of the laminate structure by the same amount. That is, in other words, the extent to which the edge bindings span across the top and bottom surfaces is equivalent for each surface. Fig. 6 shows the edge binding overlapping both top and bottom surfaces of each glass layer to hold both glass layers together and to provide an intermediate bead to receive the edge of the intermediate layer and space it from the glass layers. Like the edge bindings shown in Figs. 2-5, the edge binding of Fig. 6 overlaps the top and bottom surfaces of the laminate structure and both side of each glass layer by the same amount. In sum, the distance that the edge bindings overlap the top and bottom surfaces of all the laminates taught by Storrs '964 is the same in each case.

It is further noted that in each laminate embodiment of Storrs '964, the cross sectional views show that the portions of the wire clips and the metal strips that extend across the top and bottom surfaces of the laminates only come into contact with glass surfaces of the laminate.

With regard to the combination of Gerhardinger et al. '199, Boucher et al. '466 and Storrs '964, the Examiner states that "Storrs '964 discloses a metal edge strip as a holding means that forms inward extensions... the holding means prevent[s] dust or dirt from entering an air gap in a double pane installation" (paragraph 25 of the Official

Action). Further, regarding the length of the inward extensions, the Examiner insists that these lengths are an optimizable feature that could be easily varied depending on the glazing and as such, the claimed lengths would be obvious.

The claims of the application are distinct from the teachings of any combination of the references, specifically of Gerhardinger et al. '199, Boucher et al. '466 and Storrs '964 in that these references fail to teach, suggest, disclose or remotely hint at a number of claimed limitations. Initially, these references fail to teach a metal foil that is *bonded* to a *coating* which overlays a surface of a glass substrate. As discussed above with reference to Storrs '964, the metal strips that extend across the surfaces of the laminates are *frictionally held* and only contact *glass* surfaces of the laminate.

Further, the references fail to teach, suggest, disclose or remotely hint at a metal foil that extends inwardly across respective surfaces of the glass product with the metal foil extending across the coating having a *greater width* than the metal foil extending across the glass surface of the glass substrate.

Further, the references fail to teach, suggest, disclose or remotely hint that the distance of which the metal foil extends inwardly across the coating from the side of the glass substrate is approximately 125 mm and that the metal foil is further bonded to a front surface of the glass substrate with the metal foil extending across the front surface from the side surface of the glass substrate by a distance of approximately 6 mm or less

Claim 30 is rejected, under 35 U.S.C. § 103(a), as being unpatentable over Gerhardinger et al. '199 in view of Luski et al. '369 and further in view of Wang (Handbook of Air Conditioning and Refrigeration). Claim 32 is rejected, under 35

U.S.C. § 103(a), as being unpatentable over Gerhardinger et al. '199 in view of Luski et al. '369 and further in view of Hornika et al. (Understanding Infrared Curing). And claims 33-36 and 38 are rejected, under 35 U.S.C. § 103(a), as being unpatentable over Gerhardinger et al. '199 in view of Luski et al. '369 and further in view of Boucher et al. '466. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

The Applicant acknowledges that the additional references of Luski et al. '369, Wang, Hornika et al. and Boucher et al. '466 may arguably relate to the features indicated by the Examiner in the official action. Nevertheless, the Applicant respectfully submits that the combination of the base reference of Gerhardinger et al. '199 with this additional art still fails to in any way teach, suggest, disclose or remotely hint at the above distinguishing features of the presently claimed invention. As such, all of the raised rejections should be withdrawn at this time in view of the above amendments and remarks.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Gerhardinger et al. '199, Boucher et al. '466, Storrs '964, Luski et al. '369, Wang and Hornika et al. references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings,

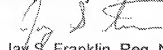
which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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